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II.—THE DIMENSIONS OF THE BABYLONIAN ARK.

The eleventh tablet of the Babylonian Nimrod epic containing the cuneiform account of the Deluge is the most perfect of the whole series, but, unfortunately, the beginnings of col. I, ll. 25 and 26, giving the number of cubits of the length, breadth and depth of the vessel, are hopelessly mutilated. We read in this passage:

elippu ša tabánûši atta
. . . *ammat mandûda mînâtúša*[1]
. . . *ammat mitxar*[2] *rupussa u mûragša*

"The ship which thou shalt build"
". . . cubits in length her shape"
". . . cubits the measure for both her breadth and height (or rather depth)."

In the new edition of Geo. Smith's *Chaldean Account of Genesis* (London, 1880), Prof. Sayce translates (p. 280):

" 600 cubits (shall be) its measure in length,"
" 60 cubits the amount of its breadth and its height."

These numbers are likewise given by Jules Oppert and the late François Lenormant in their various translations of the Flood-tablet.[3] But they ought at least to have been marked as doubtful. In his first paper on the Deluge (read before the London Society of Biblical Archaeology, Dec. 3, 1872), George Smith expressly stated[4]: "the dimensions of the vessel in the inscription are unfortunately lost by a fracture which has broken off both numbers," and in the notes to his edition of the cuneiform text published in Vol. III of the Transactions of the Society of Biblical Archaeology he remarked (p. 590) with reference to ll. 25 and 26: "number of cubits very doubtful."[1]

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[1] Cf. for this word the American Oriental Society *Proceedings*, Oct. 1887, p. xli, n. 14.—[For *mitxartu* cf. Halêvy, ZA. III, 350.]

[2] The expression *mitxar* indicates the equality (cf. *mitxariš*) of the measures for both the width and depth. [For *mitxaru* (and *mitxartu* II, 46, 37; 48, 47; IV, 19, 47; V, 39, 21, etc.) see also Delitzsch's *Assyr. Gramm.* pp. 178, 179, 208.]

[3] See *Fragments de cosmogonie chaldéenne* traduits par M. Jules Oppert, p. 15 (appendice à l'*Histoire d'Israel*, par E. Ledrain); *Le poème chaldéen du déluge* traduit de l'assyrien par Jules Oppert (Paris, 1885, Imprimerie typographique Joseph Kugelmann), p. 8; *Les origines de l'histoire* par François Lenormant (Paris, 1880), pp. 394 and 603 (appendice V).

[4] *Transactions* of the Soc. of Bibl. Arch. (cited as TSBA) Vol. II, p. 230.

The numbers are indeed very doubtful, and if we had not a parallel passage which has been entirely misunderstood heretofore it would be impossible to determine the dimensions.

The lines 25 and 26 are only preserved on two copies of the Flood-tablets, on the tablet K. 8517, which I call text C in my edition, and on the Babylonian Deluge fragment of the Spartoli collection (SP. II 960) first published (after a copy made by Mr. Pinches) in my inaugural lecture[2] delivered before the University of Göttingen. I copied all the fragments of the so-called Izdubar legends in the spring of 1882, and last summer I spent several weeks again in the British Museum re-examining the originals in order to complete my edition of the Babylonian Nimrod epic. The results of this new collation are given in the first part of the *Beiträge zur Assyriologie und vergleichenden semitischen Sprachwissenschaft*,[3] which I am editing with my learned friend Professor Friedrich Delitzsch, of Leipzig.

In examining the text of the Flood I found that the number 600 is quite probable; on text C as well as on the Babylonian duplicate the traces before *ammat mandûda*, "cubits in length," lend themselves very well to the ideogram for *ner* (Greek νῆρος),[4] the name of the number 600 in the Babylonian sexagesimal system. The number 60, however, finds no support in the original. Besides, the proportion 60 cubits wide and 600 cubits long is *a priori* most improbable.[1] In the account given by Berossus the proportions are 5 : 2 (five[2] stadia in length, and two in breadth), and in the Biblical narrative (Genesis VI 15) we have 300 cubits for the length of the ark, 50 cubits for the breadth, and 30 cubits for the height or depth, the proportions of the length to the breadth consequently being 6 : 1. Now we find about the same proportions in the cuneiform account: the breadth (as well as the depth) of the Babylonian Ark was not 60 cubits (as conjectured by Geo. Smith, Sayce, Oppert, Lenormant), but twice as much, viz. 120 cubits, thus making the proportion 10 : 2 or 5 : 1. This is plainly indicated in ll. 55 and 56 which have been universally misunderstood. Geo. Smith translated this passage:

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[1] Cf. also Smith's translation in the *Records of the Past* (RP), Vol. VII, p. 136, and in his *Assyr. Discoveries*, p. 185. *Op. cit.* p. 213, Smith remarks: "I conjecturally read 600 cubits for the length of the vessel and 60 cubits for its breadth and height, but no dependence can be placed on these characters."

[2] *Der Keilinschriftliche Sintfluthbericht* (Leipzig, 1881), translated into English by Chas. H. H. Wright in *The Nineteenth Century*, No. 6, Feb. 1882, pp. 232-241, and by S. Burnham in *The Old Testament Student*, Vol. III, No. 3 (Nov. 1883), pp. 77-85; French translation by G. Godet in his *Notes sur la Genèse* (Lausanne, 1881), pp. 28-21 (Appendice à l'ouvrage intitulé: *Les origines de l'histoire sainte d'après la Genèse* par H. Thiersch). Cf. also A. H. Sayce, *Fresh Light from the Ancient Monuments*, p. 29 ff. (German edition: *Alte Denkmäler im Lichte neuer Forschungen*, p. 28), and M. L. Kellner, *The Deluge in the Izdubar Epic and in the Old Testament* (reprinted from *The Church Review*, Nov. 1888), pp. 22-26.

[3] Article V: *Ergebnisse einer erneuten Collation der Izdubar-Legenden;* cf. esp. p. 125.

[4] Cf. my paper on *The Assyrian E-vowel* (Baltimore, 1887), p. 9 = *Am. Journ. of Phil.* VIII 271.

In its circuit 14 *measures . . . its sides*
14 *measures its measure . . . over it.*

I do not pretend to know what these words may mean. Nor is Prof. Sayce's translation much clearer :

In its circuit 14 *in all (were) its girders*
14 *in all it contained above it.*[3]

Lenormant in his *Origines de l'histoire* gives :

Dans sa couverture quatorze en tout ses fermes,
quatorze en tout il comptait . . . par dessus lui.

Oppert translates :

Puis sur le chantier, je disposai dix toises pour les briques
Dix toises furent mesurées (pour les poutres).

All that is quite impossible, of course. Oppert, however, is right in one important point. He has at least perceived that the group mistaken for the number 14 by Smith, Lenormant, and I dare say nearly all Assyriologists, is to be divided into the corner-wedge, the symbol for 10, and the character *ša*[4] or *gar*,[5] the ideogram of the double-*qanû*[1] or "double-rod" = 12 cubits. This is proved beyond all doubt by the Babylonian duplicate. There we find, just as in the Assyrian copies, the corner-wedge *u* followed by *ša* or *gar*. Now in Assyrian *u-gar* might represent the number 14, but in Babylonian it is impossible, as the Babylonian form of *ša* or *gar* has but 3 wedges and is accordingly never used for the number 4.[2] Consequently we must read 10 *gar* or double-*qanû*, i. e. 120 cubits, and the two lines 55 and 56 should be translated in the following way:

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[1] See my commentary on the Deluge published in the second edition of Eberhard Schrader's *Die Keilinschriften und das Alte Testament* (Giessen, 1883), p. 68.

[2] Eusebius gives 15 instead of 5.

[3] Cf. *Fresh Light*, p. 30: "in its circuit (?) fourteen measures its hull (measured); fourteen measures measured (the roof) above it." [Cf. ZA. III, 418.]

[4] Cf. Lepsius, *Die Babylonisch-Assyrischen Längenmasse nach der Tafel von Senkereh* (Transactions of the Berlin Academy, 1877), pp. 116 and 126 ff.; also *Ägypt. Zeitschr.* 1877, p. 3; 1878, p. 61, n. 1; and *Monatsberichte* of the Berlin Academy, Dec. 6, 1877, p. 16; Oppert, *L'étalon des mesures assyriennes* (Paris, 1875), pp. 9 and 27.

[5] The reading *ittu* or rather *ittû* (Akkadian *nandi* or rather *ninda*) as pro-

"120 cubits were high her sides" (*šaqqâ igarâtiša*)[3]

"120 cubits also was the measure of the extent of her upper part or deck, i. e. her beam" (*imtáxir kibir muxxiša*).

The verb *imtáxir*, like its derivative *mitxar* in l. 26, again refers to the equality of the measures for the depth and breadth, both dimensions of course taken *amidships*, which seems to be the meaning of the term *ina ganxîsa*[3] at the beginning of l. 55 translated by Smith, Oppert, and Lenormant as "*circuit*" or "*chantier*" or "*couverture*" respectively. So we know now that the length of the Babylonian ark was a *ner* or 600 cubits, and the breadth as well as the depth two *sosses* or 120 cubits.

According to Lepsius,[4] the Babylonian cubit was = 0.5328 meters; 600 × 120 cubits would accordingly be = 319.68 × 63.936 meters, in round numbers 320 × 64 or (counting the meter = 40 American inches instead of 39.368) = about 1066 × 213 feet. According to Oppert, however, the sign U is not the ideogram for

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posed by Delitzsch in Lepsius' *Längenmasse*, p. 116 (cf. *Ägypt. Zeitschr.* 1877, p. 2, n. 1), is untenable. Delitzsch seems to have considered the ideogram for the double-rod as identical with the ideogram for *namandu* and *ittû* (S^b 197, V R. 29, 63 g. h). Cf. Amiaud, *Tableau comparé*, p. 21, No. 53; Brünnow's *Classified List*, p. 204; also Jensen, ZA. I 403.

[1] Cf. Greek ἄκαινα and Ezechiel XL 5: בְּיַד הָאִישׁ קְנֵה הַמִּדָּה שֵׁשׁ אַמּוֹת בָּאַמָּה וָטֹפַח "the measuring-rod in the man's hand was six cubits (each of one cubit and an hand breadth)"; also מְלוֹ[א] הַקָּנֶה Ez. XLI 8, where the following שֵׁשׁ אַמּוֹת (?) אַצִּילָה(?) evidently is an explanatory gloss. See Cornill's *Ezechiel*, p. 459.

[2] See the *Sign-List* in Pinches' *Texts in the Babylonian Wedge-Writing* (London, 1882), p. v below and ibid. No. 251.

[3] Cf. for this word (= Arabic حجرات) Delitzsch's *Assyr. Stud.* p. 138.—[M. reads, ZA. III, 418, *karxisa* instead of *ganxisa*.]

[4] See the tables appended to Lepsius' paper *Die Längenmasse der Alten* (Proc. Berlin Acad. Nov. 22, 1883).

the full cubit (*ammat*),[1] but for the half-cubit or span (Hebrew זֶרֶת), and after mature consideration I have reached the conviction that Oppert is right.[2] The Telloh statue of an architect with a graded rule clearly shows that the Babylonian half-cubit was 27 centimeters.[3] Accordingly, 600 U × 120 U would be = 162 × 32.4 meters or (counting the meter again = 40 American inches) = about 540 × 108 feet.[4]

We can even determine the draught of Xisuthros' vessel. At least it seems to me that the words *illiku šînipatsu* at the end of this paragraph describing the building of the Ark can hardly mean anything but that the ship when everything *uštabbalu elîš u šapliš* "was brought up and down," i. e. with full cargo: *illiku šînipatsu* "went in two thirds of it," i. e. the *igaru* or "side"; so if the sides were 120 (half-)cubits, the Babylonian Ark drew 80 (half-)cubits of water.

I may add here that it is my firm belief that the Babylonian account of the Flood is the poetic description of an historical event which actually took place in the valley of the Euphrates and Tigris. Of course, it was no universal flood as the orthodox theologians of the old school would have us believe. Some years since the well-known Vienna geologist, Professor Edward Suess, made a special study of the Flood-story, on the basis of my interpretation, from the geological point of view. He devotes the first chapter of his great work on the surface of the earth [1] to a sober and critical explanation of the cuneiform account of the Deluge, and arrives at the following conclusions:

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[1] Oppert, therefore, reads the ideogram U: *axu* (cf. II R. 48, 48c, and Delitzsch's *Assyr. Wörterbuch*, pp. 277 and 283, n. 7) instead of *ammat*, and it must be admitted that the two passages in the East India House inscription of Nebuchadnezzar (col. VI, 25 and col. VIII, 45; cf. C. P. Tiele's *Babyl.-assyr. Geschichte*, pp. 447 and 449) are by no means sufficient evidence for the identity of U and *ammat*. Cf. for this Oppert's remarks on *Die Maasse von Senkereh und Khorsabad* in the *Monatsberichte* of the Berlin Academy, Dec. 6, 1877, p. 5; Lepsius, *ibid.*, pp. 8 and 17; *Monatsberichte*, Feb. 4, 1878, p. 5; Schrader, in the Jena *Literaturzeitung*, 1878, article 239; Lepsius, *Nochmals über die Babylonische halbe Elle des Herrn Oppert* in the *Sitzungsberichte* of the Berlin Academy, Oct. 19, 1882 (cf. *Nachträgliches*, ibid., Nov. 16); Oppert, *Les mesures assyriennes de capacité et de superfice* (Paris, 1886), p. 26 (Tirage à part de la *Revue d'assyriologie et d'archéologie orientale*, Vol. I, No. IV.

[2] Cf. Delitzsch's remarks on p. 179 of his *Paradies*.

[3] See Oppert's remarks in the Transactions of the Berlin Oriental Congress (Berlin, 1882), Part II, Section I, p. 246; Dr. Martin Schultze, *Chaldäische Bildwerke im Museum des Louvre* (Jahresbericht des Realprogymnasiums zu Oldesloe, Ostern, 1883), pp. 6–9; Hommel, *Semiten*, p. 501, n. 264.

[4] I have been informed that a vessel of these dimensions would have a displacement of more than 80,000 tons. It is well known that the "Great Eastern," which was built on the lower Thames by Scott Russell in 1860, was 207 meters = ca. 690 feet long and 17.67 meters = ca. 59 feet deep. Her displacement was 27,384 tons.

1. The catastrophe known by the name of the Deluge happened at the lower Euphrates, entailing an extensive and devastating inundation of the Mesopotamian valley.

2. The chief cause was a considerable earthquake in the region of the Persian Gulf or farther south, preceded by several slighter shocks.

3. During the period of the most vehement shocks a cyclone very probably came up from the south out of the Persian Gulf.

4. The traditions of other peoples in no way justify the belief that the flood extended beyond the lower course of the Euphrates, let alone over the whole earth.

I hope to treat of these questions more fully in the introduction to my revised translation of the Deluge which I expect to publish in the new edition of the Records of the Past.

PAUL HAUPT.

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[1] *Das Antlitz der Erde* (Prag und Leipzig, 1883) p. 92 (separate edition under the title *Die Sintfluth.* Eine geologische Studie von Eduard Suess, p. 68). Cf. *The Old Testament Student,* Vol. III, No. 3 (Chicago, 1883, p. 76, and Franz Delitzsch's *Neuen Commentar über die Genesis* (Leipzig, 1887), p. 164. A. Dillmann's objections (*Genesis* ^{5} 135) can hardly be considered valid.